

wherein M is Fe[II], Fe[III], Co[I], Co[II], Co[III], Mn[I], Mn[II], Mn[III], Mn[IV], Ru[II], Ru[III] or Ru[IV]; X represents an atom or group covalently or ionically bonded to the transition metal M;

R is independently selected from hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl or substituted heterohydrocarbyl;

Z is a bridging group comprising a donor atom of N, P or S or alternatively is a neutral group comprising a C₁₋₄ alkylene group, a silyl or germyl group; and

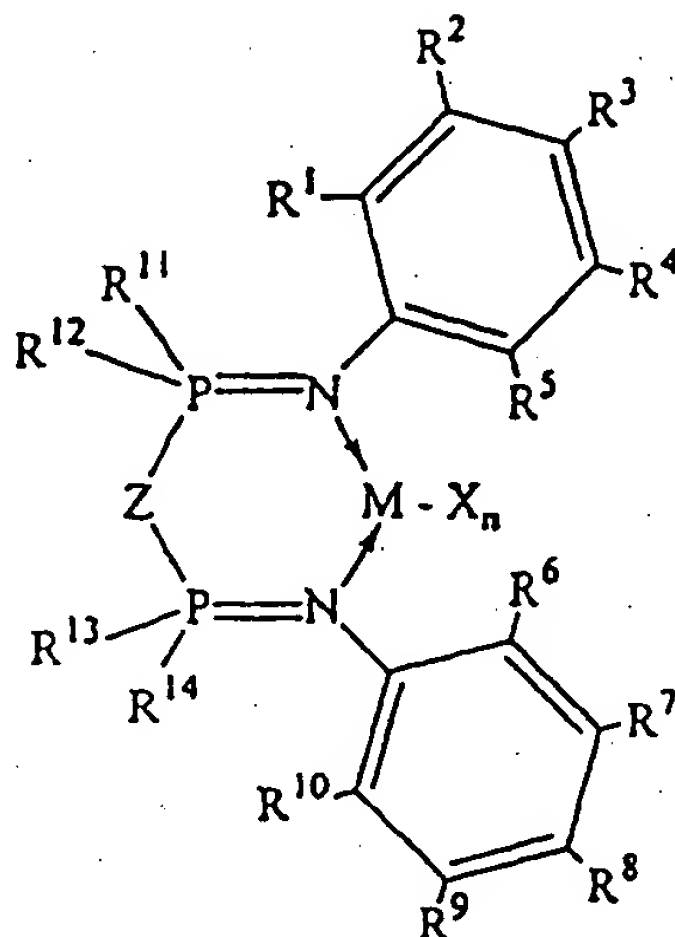
n = an integer to satisfy the valency of M, and

(2) an activating quantity of an activator compound.

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40. (New) A polymerization catalyst comprising
- (1) a transition metal complex having the formula:



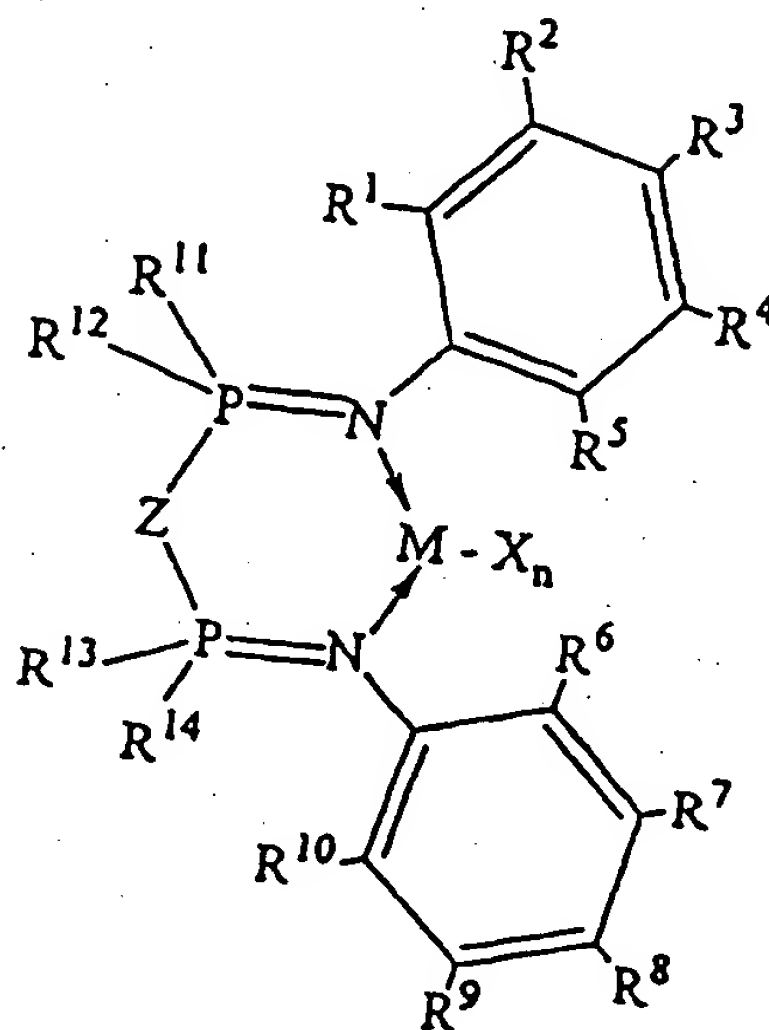
wherein M is Fe[II], Fe[III], Co[I], Co[II], Co[III], Mn[I], Mn[II], Mn[III], Mn[IV], Ru[II], Ru[III] or Ru[IV]; X represents an atom or group covalently or ionically bonded to the transition metal M; Z is a bridging group comprising a donor atom of N, P or S or alternatively is a neutral group comprising a C₁₋₄ alkylene group, a silyl or germyl group, R¹-R¹⁴ are independently selected from hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl or substituted heterohydrocarbyl; and n = an integer to satisfy the valency of M, and

- (2) an activating quantity of an activator compound.

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41. (New) A polymerization catalyst comprising
- (1) a complex having the formula



wherein M is Fe[II], Fe[III], Ni[II], Co[I], Co[II], Co[III], Mn[I], Mn[II], Mn[III], Mn[IV], Ru[II], Ru[III], Ru[IV], Pd[II], V[III], V[IV] or V[V];

X represents an atom or group covalently or ionically bonded to the transition metal M;

Z is a bridging group comprising a donor atom of N, P or S or alternatively is a neutral group comprising a C₁₋₄ alkylene group, a silyl or germyl group,

R¹-R¹⁴ are independently selected from hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, or substituted heterohydrocarbyl, and at least one of R¹-R¹⁰ contains two or more carbon atoms; and

n = an integer to satisfy the valency of M, and

- (2) an activating quantity of an activator compound.

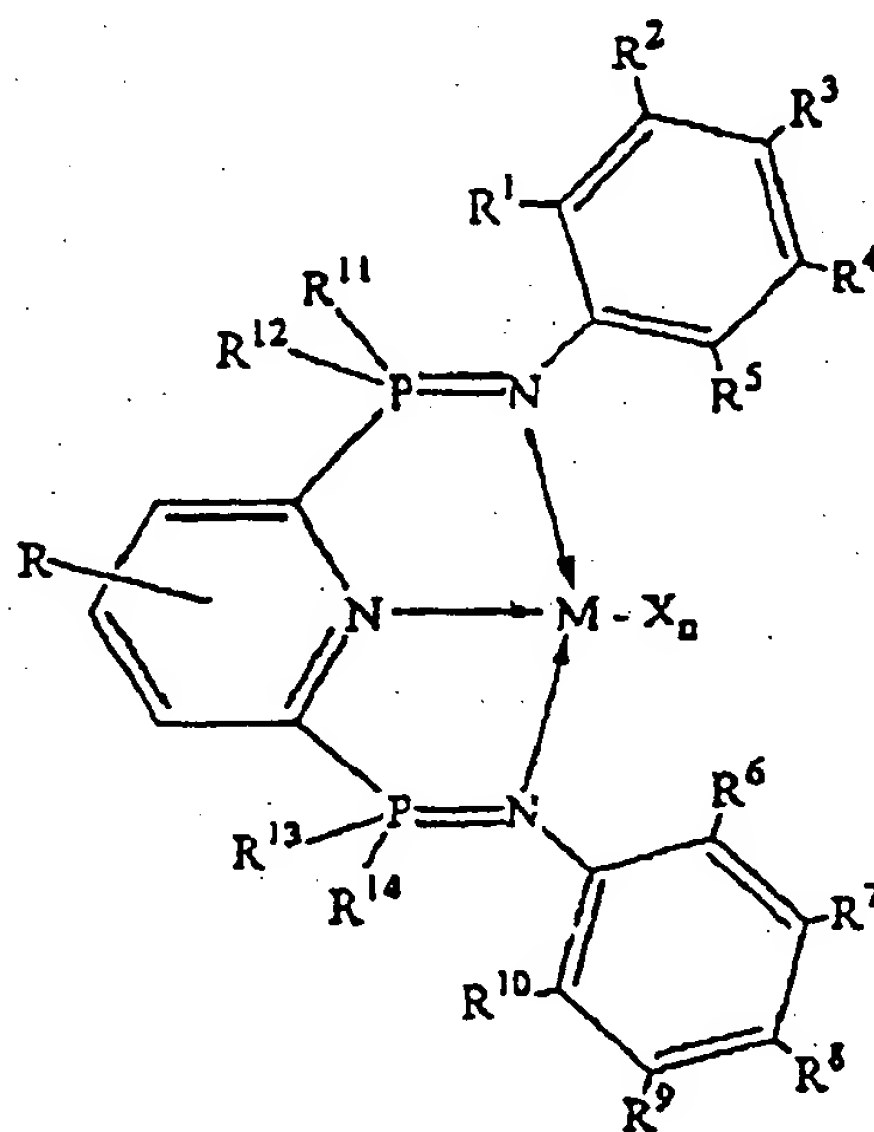
42. (New) The polymerization catalyst of claim 40 or 41 wherein R¹¹-R¹⁴ are phenyl, alkyl or cycloalkyl.

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43. (New) The polymerization catalyst of claim 39, 40, or 41 wherein the bridging group Z is -CH₂- or a donor atom N.

44. (New) The polymerization catalyst of claim 40 or 41 having the formula:



wherein R is hydrogen or hydrocarbyl.

45. (New) The polymerization catalyst of claim 39, 40, or 41 wherein the metal M is Fe or Co.

46. (New) The polymerization catalyst of claim 39, 40, or 41 wherein the Group X is chloride.

47. (New) The polymerization catalyst of claim 39, 40, or 41 wherein the activator compound is an organoaluminum compound or a hydrocarbylboron compound.

48. (New) The polymerization catalyst of claim 39, 40, or 41 further comprising a neutral Lewis base.

49. (New) The polymerization catalyst of claim 39, 40, or 41 further comprising a support.